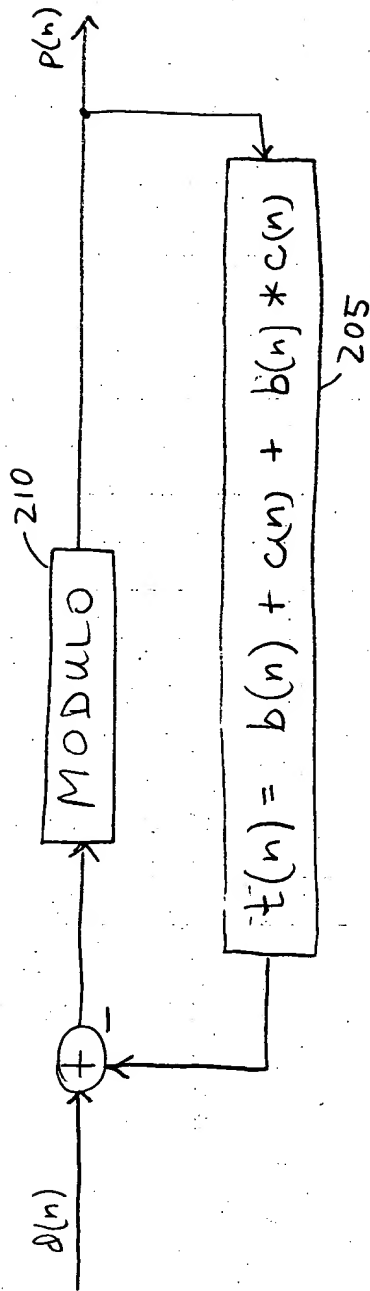


FIG. 1



200

FIG. 2

300A

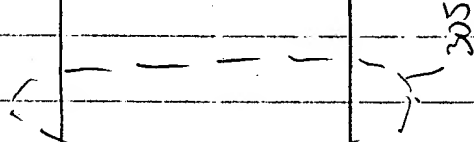
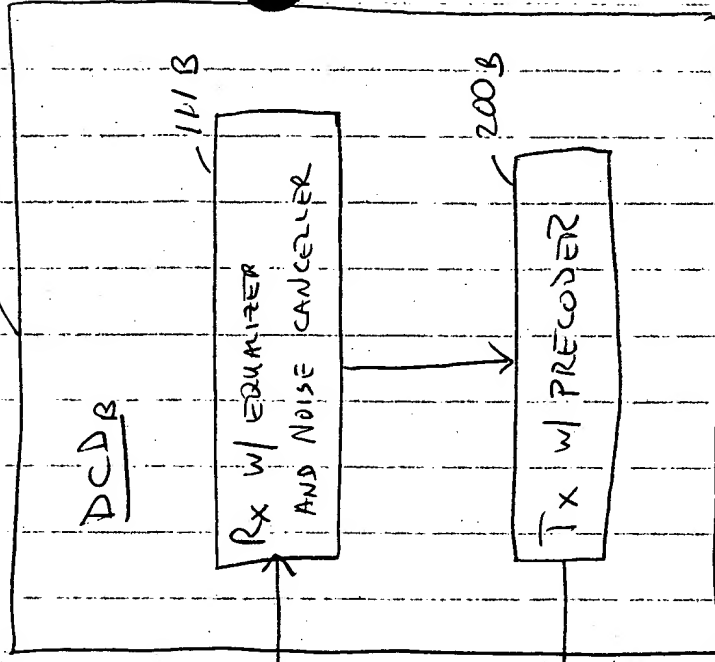
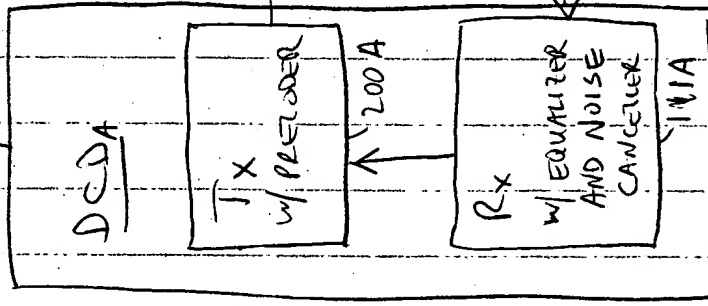


FIG. 3

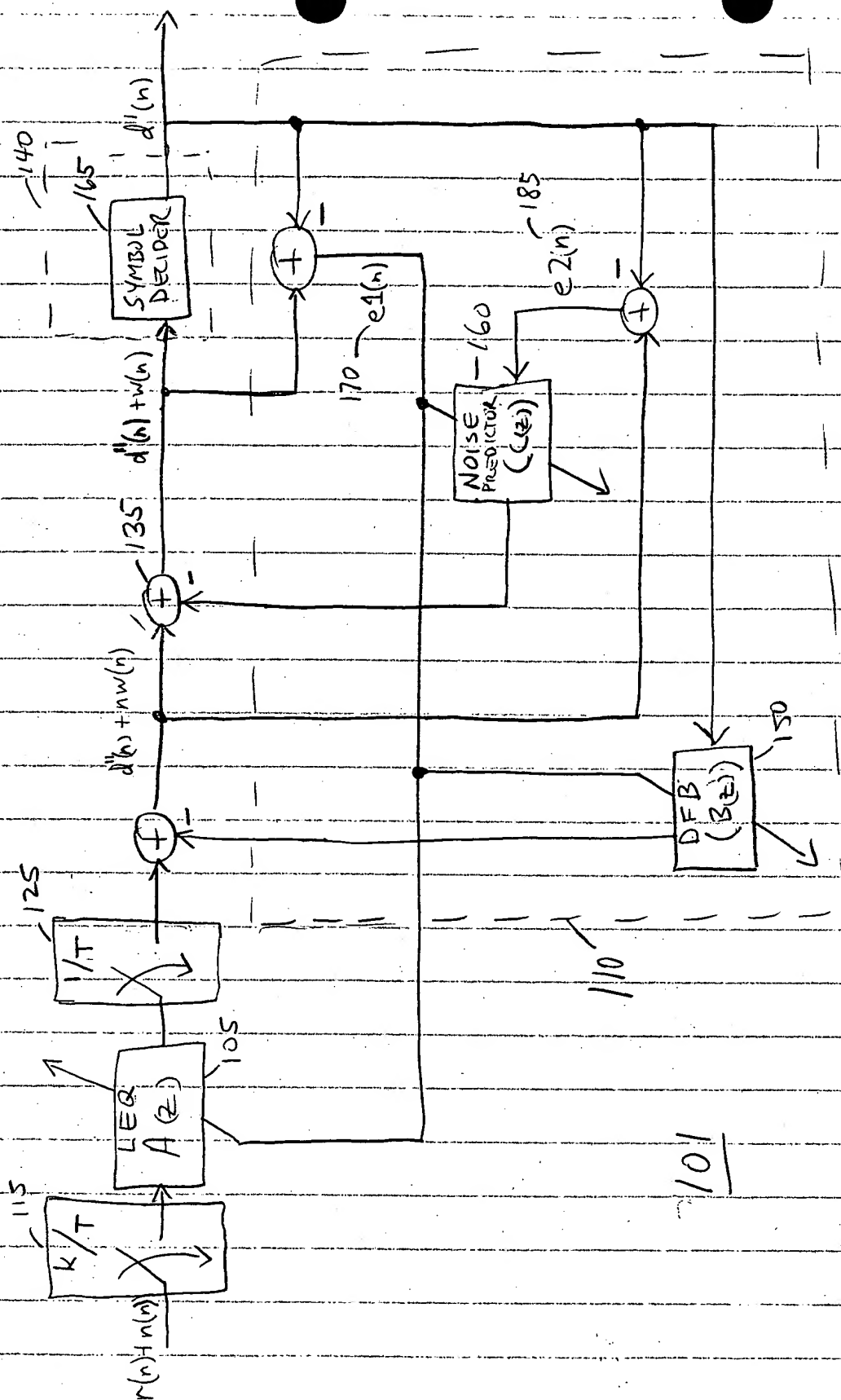


FIG. 4

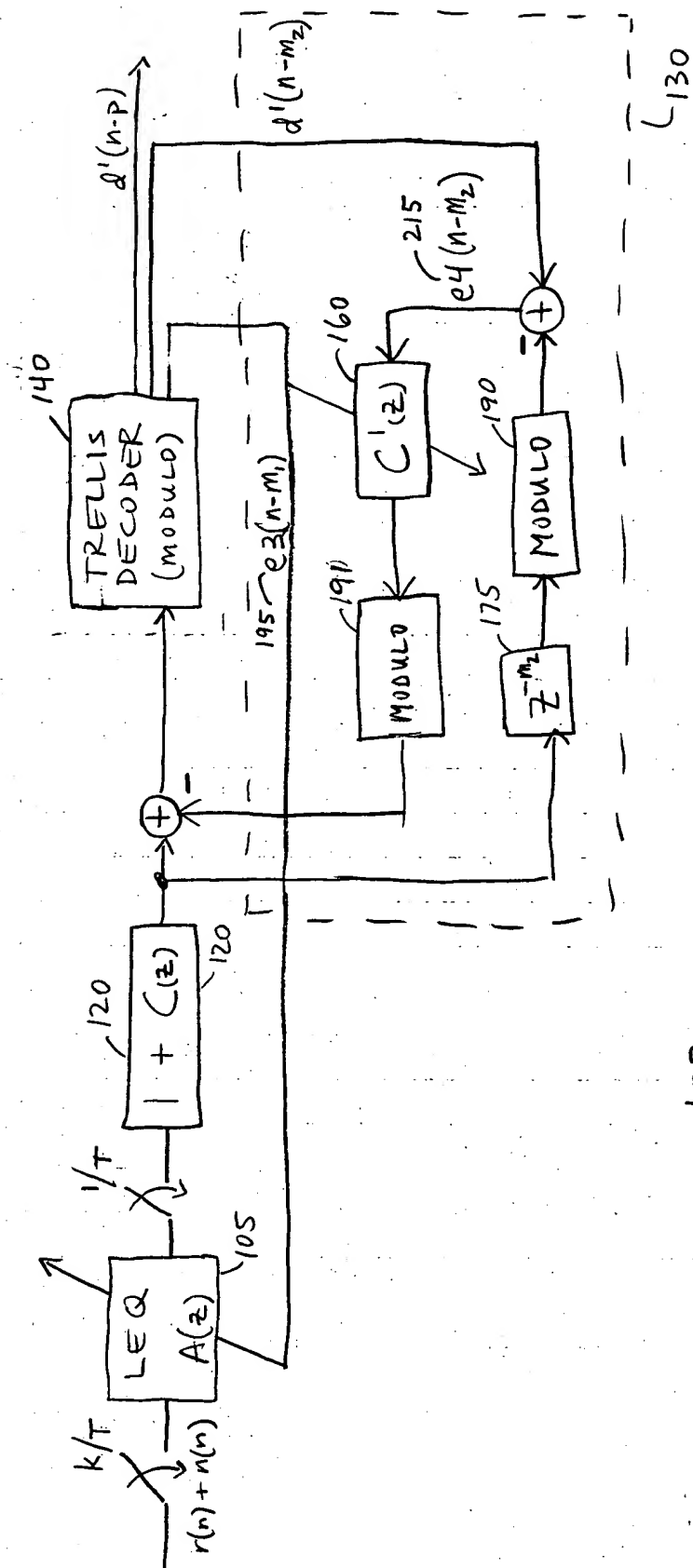


Fig. 5

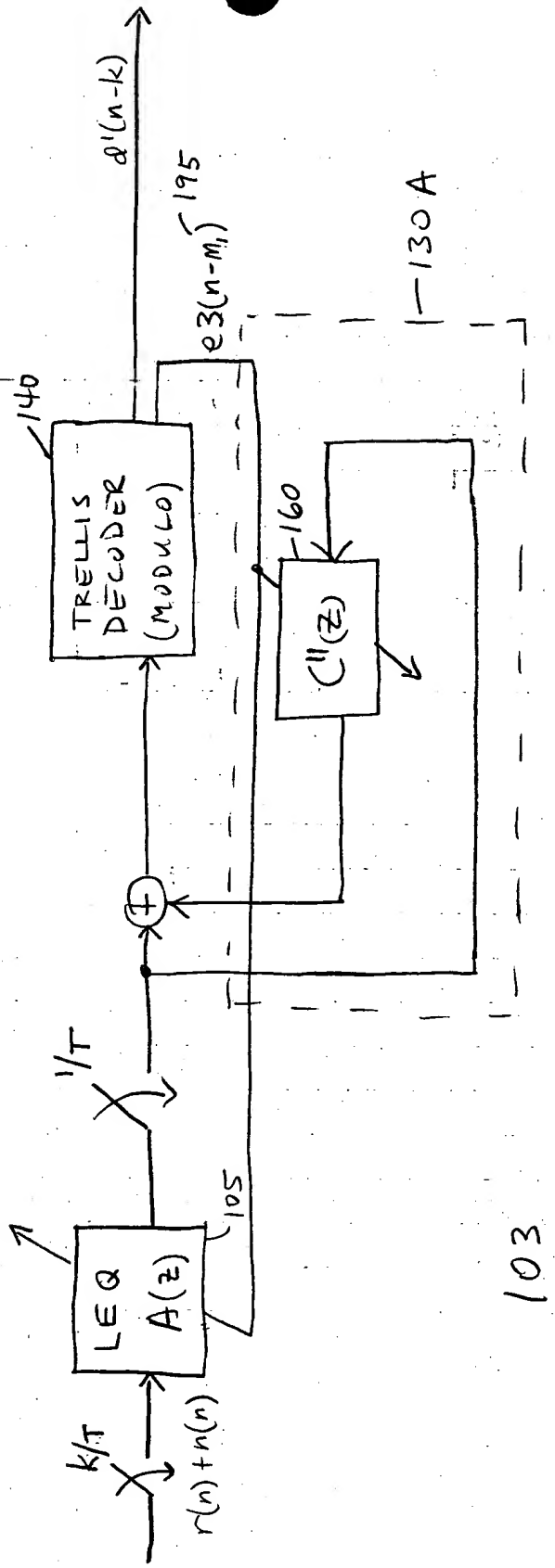
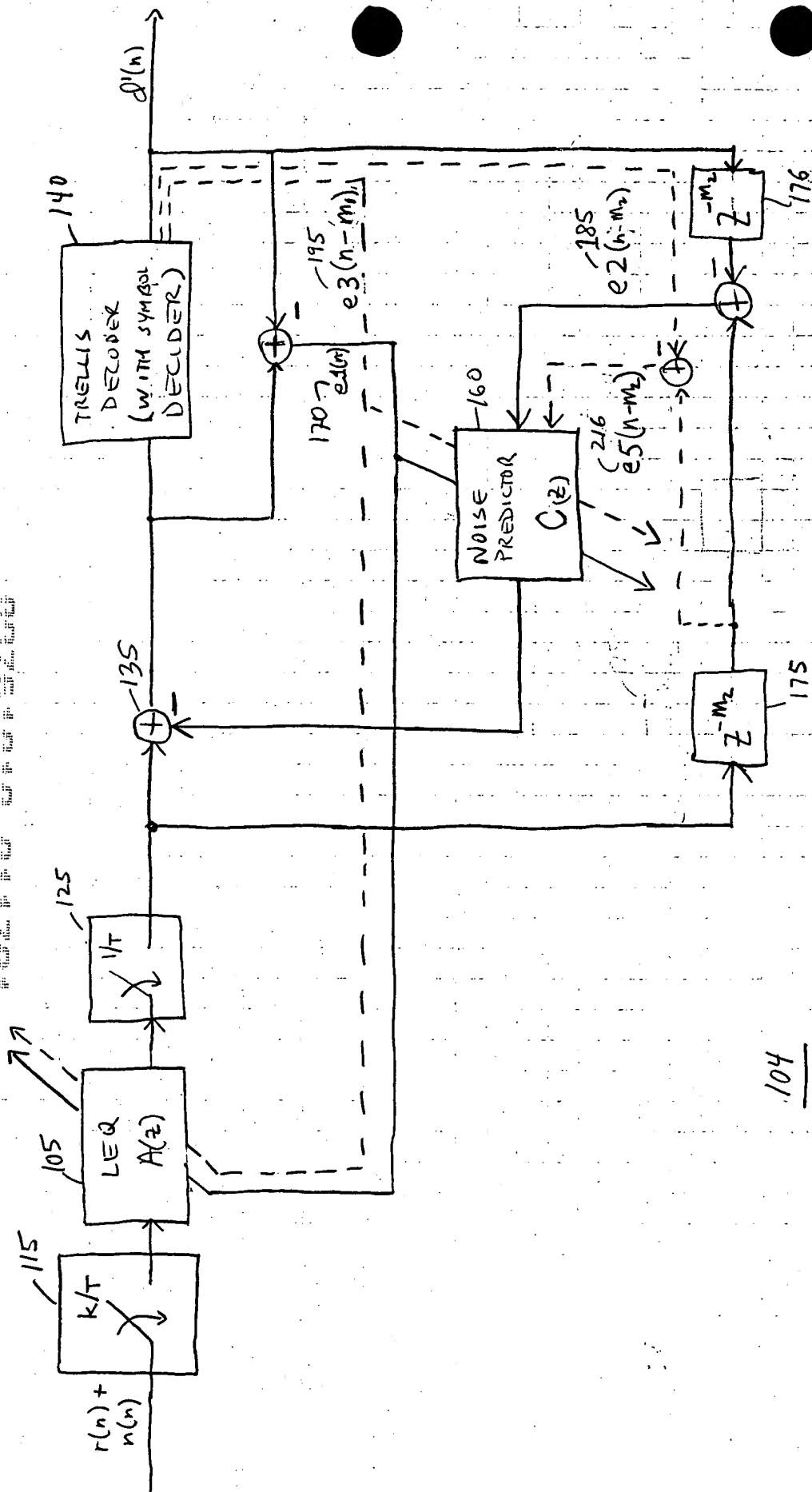


FIG. 6

Year	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100
Population	1,000,000	1,050,000	1,100,000	1,150,000	1,200,000	1,250,000	1,300,000	1,350,000	1,400,000	1,450,000	1,500,000	1,550,000	1,600,000	1,650,000	1,700,000	1,750,000	1,800,000	1,850,000	1,900,000	1,950,000	2,000,000	2,050,000	2,100,000	2,150,000	2,200,000	2,250,000	2,300,000	2,350,000	2,400,000	2,450,000	2,500,000	2,550,000	2,600,000	2,650,000	2,700,000	2,750,000	2,800,000	2,850,000	2,900,000	2,950,000	3,000,000	3,050,000	3,100,000	3,150,000	3,200,000	3,250,000	3,300,000	3,350,000	3,400,000	3,450,000	3,500,000	3,550,000	3,600,000	3,650,000	3,700,000	3,750,000	3,800,000	3,850,000	3,900,000	3,950,000	4,000,000	4,050,000	4,100,000	4,150,000	4,200,000	4,250,000	4,300,000	4,350,000	4,400,000	4,450,000	4,500,000	4,550,000	4,600,000	4,650,000	4,700,000	4,750,000	4,800,000	4,850,000	4,900,000	4,950,000	5,000,000	5,050,000	5,100,000	5,150,000	5,200,000	5,250,000	5,300,000	5,350,000	5,400,000	5,450,000	5,500,000	5,550,000	5,600,000	5,650,000	5,700,000	5,750,000	5,800,000	5,850,000	5,900,000	5,950,000	6,000,000	6,050,000	6,100,000	6,150,000	6,200,000	6,250,000	6,300,000	6,350,000	6,400,000	6,450,000	6,500,000	6,550,000	6,600,000	6,650,000	6,700,000	6,750,000	6,800,000	6,850,000	6,900,000	6,950,000	7,000,000	7,050,000	7,100,000	7,150,000	7,200,000	7,250,000	7,300,000	7,350,000	7,400,000	7,450,000	7,500,000	7,550,000	7,600,000	7,650,000	7,700,000	7,750,000	7,80																																																																



F1G7

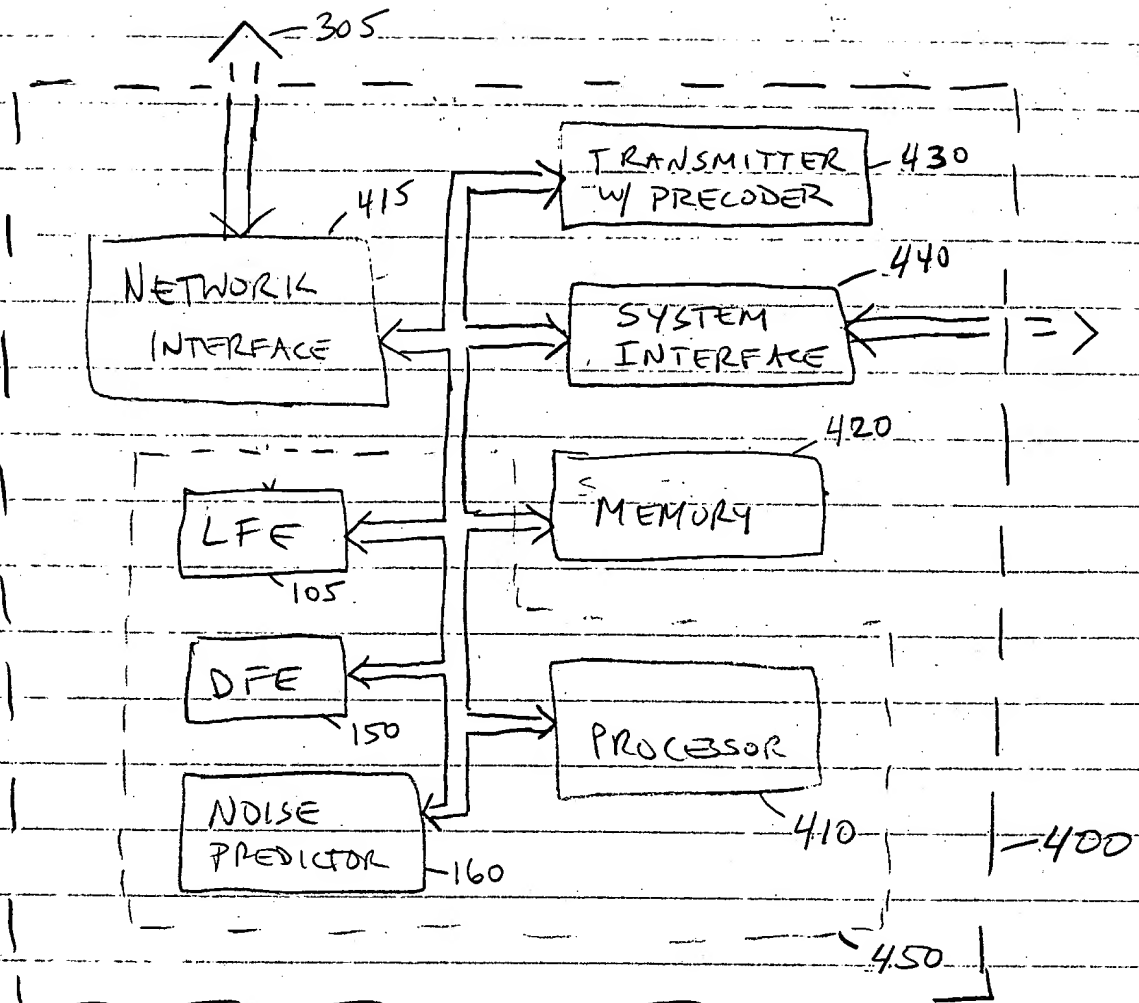


FIG 8



START: RECEIVE TRAINING SIGNAL HAVING NOISE AND ISI -500

FIG. 9

DETERMINE A PLURALITY OF LINEAR FEEDFORWARD EQUALIZATION COEFFICIENTS  $a(n)$ , UTILIZING A  $k/T$  SAMPLE RATE AND ADAPTING TO A FIRST TRAINING ERROR SIGNAL (FOR PRE-CURSOR EQUALIZATION AND ISI REDUCTION). -505

NO / PRECODING TO BE UTILIZED? / YES -510

DETERMINE A PLURALITY OF DECISION FEEDBACK EQUALIZATION COEFFICIENTS  $b(n)$ , UTILIZING A  $1/T$  SAMPLE RATE, AND ADAPTING TO THE FIRST TRAINING ERROR SIGNAL (FOR POST-CURSOR EQUALIZATION AND ISI REDUCTION). -515

DETERMINE A PLURALITY OF CORRELATED NOISE REDUCTION COEFFICIENTS  $c(n)$ , UTILIZING A  $1/T$  SAMPLE RATE, HAVING AN INPUT OF A SECOND TRAINING ERROR SIGNAL AND ADAPTING TO THE FIRST TRAINING ERROR SIGNAL FOR CORRELATED NOISE REDUCTION. -520

TRAINING PERIOD COMPLETE? NO / YES -525

PRECODING TO BE UTILIZED? YES / NO -530

DETERMINE A PLURALITY OF COEFFICIENTS  $t(n)$  FOR PRECODING, WITH  $t(n) = b(n) + c(n) + b(n) * c(n)$ , AND FOR  $BER < 10^{-7}$ , RESET COEFFICIENTS  $c(n)$  TO ZERO -535

RECEIVE AND TRELLIS DECODE TRANSMITTED DATA -540

DETERMINE AND SELECT A TRELLIS PATH HAVING A SMALLEST CUMULATIVE ERROR -545

DETERMINE A BRANCH ERROR (METRIC), ASSOCIATED WITH A SELECTED PREVIOUS STATE OF THE SELECTED TRELLIS PATH, TO FORM A TRELLIS ERROR SIGNAL. -550

UPDATE LINEAR FEEDFORWARD EQUALIZATION COEFFICIENTS  $a(n)$  WITH ADAPTATION TO THE TRELLIS ERROR SIGNAL -555

UPDATE CORRELATED NOISE REDUCTION COEFFICIENTS  $c(n)$  WITH ADAPTATION TO THE TRELLIS ERROR SIGNAL AND WITH INPUT OF A TENTATIVE ERROR SIGNAL, THE TENTATIVE ERROR SIGNAL FORMED AS A DIFFERENCE BETWEEN A TENTATIVE SYMBOL DECISION ( $\hat{d}'(n-m_2)$ ) AND THE RECEIVED DATA SIGNAL SUBSEQUENT TO EQUALIZATION (AND FILTERING). -560

NO / COMMUNICATION SESSION COMPLETED? / YES -565

RETURN -570

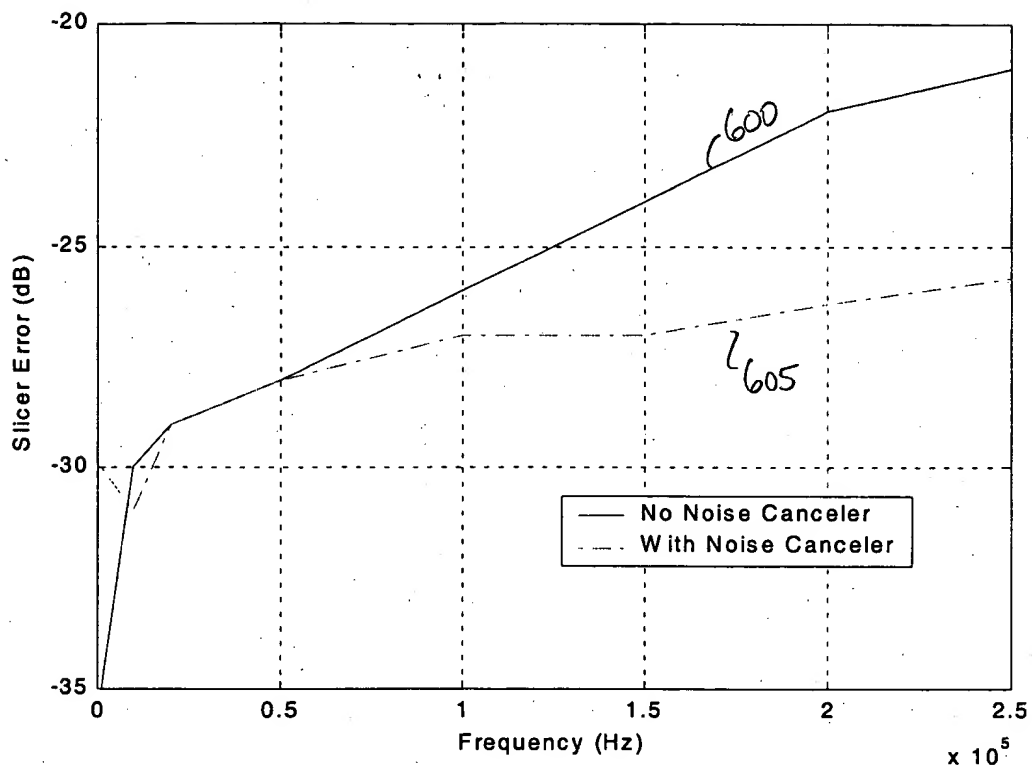


Figure 10

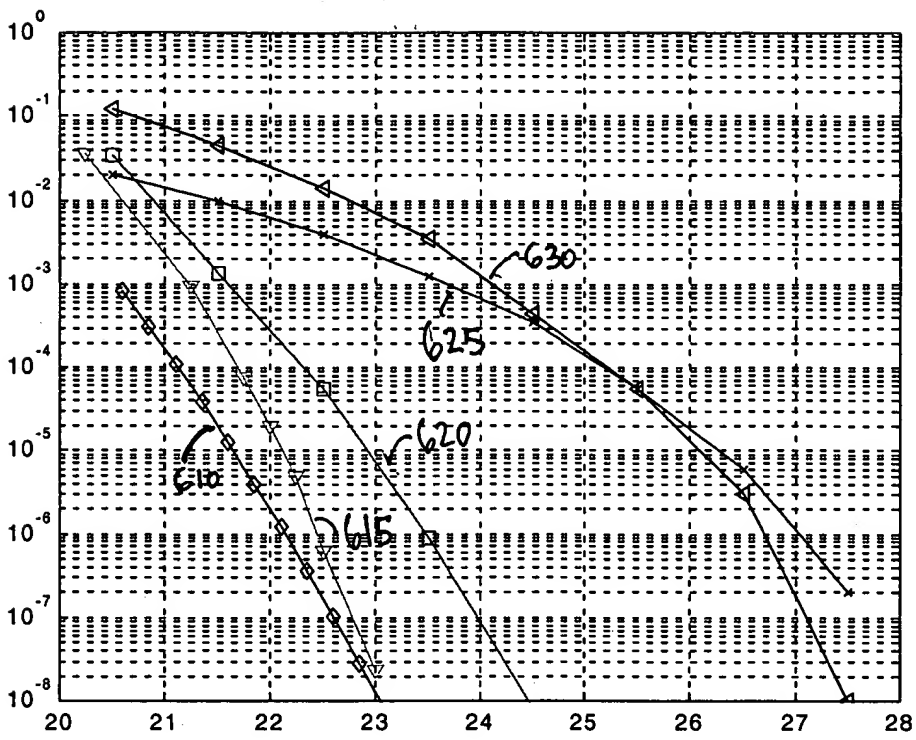


Figure 11

TOP SECRET

720                      735

Crosstalk Environment	Correlation Canceller Improved Performance Margin(dB)
700 24T1+24 HDSL2 (C)	1.4
705 39 HDSL2 (C)	1.5
710 24 ADSL+24 HDSL(C)	1.8
715 24 T1+24 HDSL2 (R)	1.4

Figure 12